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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/599,109

Filing Date: March 20, 2007

Appellant(s): BORGEN, EYSTEIN

Christian D. Abel (Reg. #43,455)
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed June 29, 2011 appealing from the Office action mailed October 25, 2011.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 1-12 are rejected and pending.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the

subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

6,619,918	Rebsdorf	9-2003
4,653,982	Kojima et al.	3-1987

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1, 6-8 and 10-12 are rejected under 35 U.S.C. 102(b) as being anticipated by USP 6,619,918 (Rebsdorf hereinafter).

In re claim 1 Rebsdorf discloses a method for controlling the output of a wind power plant comprising a converter unit, the method comprising establishing an output power range for the converter unit, measuring the output power of the converter unit, and if the output power of the converter unit is within said range, changing the pitch angle of the rotor blades in order to minimise variations in the thrust of the rotor blades in the wind direction individually or collectively, and if the output power of the converter is outside this range, changing the pitch angle of the rotor blade in order to bring the power output within the range (col. 1 line 55 - col. 2 line 18, col. 2 line 36 - 58, col. 3 line 1 - col. 4 line 4).

In re claim 6 Rebsdorf discloses a method according to claim 1, wherein the momentary thrust of the rotor blades in the wind direction can be determined directly or indirectly by means of strain gauges (7, 8), wind velocity measurements, by measuring geometric deflection of the blades, measuring the generator torque and/or measuring the generator output together with simultaneous measurement of the pitch angles of the blade or blades, and/or by measuring or using the pitch moment of the blades about the rotational axis of the pitch bearing either by mounting the blades leaning backwards in the pitch bearing, or by shaping the blades so that the impact point on the blade is behind the rotational axis of the pitch bearing in relation to the rotational direction of the rotor.

In re claim 7 Rebsdorf discloses a method according to claim 1, wherein the pitch angle of the rotor blades is in addition changed with respect to minimising direction errors for the wind power plant.

In re claim 8 Rebsdorf discloses a method according to claim 7, wherein the direction error is corrected if it is outside a given range (col. 3 lines 1-10).

In re claim 10 Rebsdorf discloses a method according to claim 1, wherein the pitch angles of the rotor blades are adjusted individually and/or independent of each other (col. 3 lines 1-10).

In re claim 11 Rebsdorf discloses a method according to claim 1, wherein the wind field in a plane that is substantially perpendicular to the wind direction is predicted by using directly or indirectly measured values of the wind forces acting on the rotor

blade or blades that is/are at the front in relation to the rotational direction of the rotor (col. 2 lines 36-58).

In re claim 12 Rebsdorf discloses a method according to claim 1, wherein the thrust of the rotor blades in the wind direction is used actively to counter motions of the wind power plant tower by regulating the pitch angles of the rotor blades (col. 2 lines 36-58).

Claims 2-4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rebsdorf.

In re claims 2-4 Rebsdorf teaches all of the limitations but does not explicitly teach the use of an average wind velocity. Rebsdorf teaches the use of instantaneous measurements (col. 1 line 65 - col. 2 line 5) to determine the pitch of the rotor blades. One of ordinary skill in the wind mill art would have known that there are several ways to determine an acceptable rotor blade pitch angle, for example only, through use of an instantaneous wind velocity or blade deflection measurement or through use of an average wind velocity or blade deflection measurement. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the wind mill of Rebsdorf by using an average wind velocity to determine an acceptable rotor blade pitch angle as an engineering expedient since it provides a way to rule out unacceptable or extreme blade pitch angles due to an instantaneous wind velocity that is a result of a wind gust.

In re claim 9 Rebsdorf discloses all of the limitations except for wherein the pitch angle of the rotor blades are adjusted differently for different rotational positions.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Rebsdorf by adjusting the pitch angle of the rotor blades differently for different rotational positions for the purpose of accommodating different wind velocities measured in different locations around the hub.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rebsdorf in view of USP 4,653,982 (Kojima et al. hereinafter).

In re claim 5 Rebsdorf discloses all of the limitations except for wherein the thrust of the rotor blades in the wind direction is in addition adjusted by changing the rotor rpm by adjusting the generator rotation resistance moment and/or rotor brakes.

Kojima et al. teach the use of a brake (24) against a shaft (21).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Rebsdorf by adding a brake on the shaft as taught in Kojima et al. for the purposes of holding the shaft against rotation (col. 3 lines 33-35 of Kojima et al.).

(10) Response to Argument

In re claim 1 Appellants argue that Rebsdorf does not teach establishing a power output range. Examiner points to col. 3 lines 19-31 along with Fig. 2 which shows a power output range that is directly related to wind velocity. Applicant argues that Rebsdorf contains no teaching of making “stress-reducing” pitch adjustments if output power is within this range. Fig. 2 shows 3 ranges of power output. A first range at start up prior to reaching nominal power, a second range that maintains nominal power (P_N), and a third range where the wind velocity is too high to maintain safe standards and the

power output would continue to rise in an unsafe manner were the blades not pitched to reduce speed. Applicant argues that Rebsdorf does not make pitch adjustments relative to power output. Since Rebsdorf makes pitch adjustments relative to wind speed which is directly correlated to power output as shown in Fig. 2, a person having ordinary skill in the art at the time of the invention that Rebsdorf makes pitch adjustments relative to power output.

Appellants state that "Claim 1 further provides that if (and only if) the output power is outside the established range, then the (possibly stress-inducing) pitch corrections are made in order to bring the power output back within that range". Examiner wishes to note that the phrases "if and only if" and "stress-inducing pitch corrections" are not found in claim 1.

In re claims 7 and 8 Appellants argue that Rebsdorf contains no teachings related to the direction of the wind power plant or that this direction can be altered by altering the pitch angle of the blades. Examiner points to col. 2 lines 44-46 which state "A control unit **4** for controlling the pitch of the blades and possibly the position of the rotor relative to the wind direction" (emphasis in original).

In re claim 2 Appellants argue that Rebsdorf does not regulate towards a specific thrust value but rather attempts to avoid an unsafe value. Examiner wishes to point out that claim 2 does not disclose regulating towards a specific value but rather "towards a calculated target value". No specific value is disclosed. Examiner wishes to point out that avoiding an unsafe value is being considered the same as regulating towards a calculated target value. In Rebsdorf, the act of avoiding an unsafe value is

accomplished by regulating towards a calculated target value, specifically by regulating towards nominal power as shown in Fig. 2 of Rebsdorf (a thorough explanation of Fig. 2 can be found at col. 3 lines 19-31 and col. 4 lines 6-23). Appellants argue that the unsafe value of Rebsdorf is not different for different average wind velocities, but is an absolute value. This is not what is shown in Fig. 2. Fig. 2 shows that for a specific range of wind velocities that the target value is nominal power (P_N) and that for wind velocities higher than this established range that the target value is either zero as is shown by the solid vertical lines in Fig. 2 or the target value is a value less than nominal power (P_N) as is shown by dashed line D. In order to have a safe and unsafe value, the safe and unsafe values must first be known or calculated. When Rebsdorf encounters an unsafe value then action is taken to move towards one of a number of safe values.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/AARON R EASTMAN/

Examiner, Art Unit 3745

Conferees:

/EDWARD LOOK/
Supervisory Patent Examiner, Art Unit 3745

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/Kenneth B Rinehart/

Supervisory Patent Examiner, Art Unit 3743